REMARKS

In accordance with the foregoing, claims 1-11 and 15-16 have been amended to improve clarity and further define the recitations, and claims 21-26 have been cancelled, without prejudice or disclaimer. Further, the amendments to the claims are to clarify that the driver monitors the display load factor and limits the range of the drive frequency so that the color temperature value of white display is maintained to be constant.

Claims 1-20 are pending and under consideration. Reconsideration is requested.

REJECTION UNDER 35 U.S.C. § 102:

In the Office Action at pages 2-5, items 2-7, claims 1-3, 6, 7, 22, and 24 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,400,347 to Kang ("Kang"). The rejection is traversed and reconsideration is requested.

Kang generally describes a method for driving sustain lines in a plasma display panel. See column 4, lines 40-60. On page 2 of the Office Action, column 4, lines 40-60, are referred to as teaching or suggesting, "a drive unit which monitors a display load factor, receives image signals of said different colors and drives pixels of each of the colors in the panel according to intensities of the image signals so as to have the pixels emit light with emission intensities corresponding to the intensities of the image signals, **while controlling to decrease a drive frequency of sustain discharges as the monitored display load factor increases**," emphasis added, as recited in independent claim 1.

In essence, the method of Kang provides the following:

> **measuring the brightness** of each color signal and the color coordinates from at least more than one sub-field;
>
> **calculating the number of the sustain pulses of the color signal ratio required in good white balance**;
>
> **applying the sustain pulse** to the scan electrode and the common electrode after calculating the number of the sustain pulses;
>
> **applying an erase pulse** of a predetermined width to the scan electrode and the address electrode by the color **based on the calculated value** for the period in which the sustain pulse is applied; and
>
> **independently adjusting the sustain period** of each color signal **based on the erase pulse by the color**. (Emphasis added)

However, Kang makes no reference of a relationship of the drive frequency of the sustain

discharges and the display load factor and driving the pixels while the relationship between the sustain discharges and the display load factor occurs. Basically, Kang calculates the number of sustain pulses of the color signal ratio required in good white balance. Once a value for this calculated number is determined, then the sustain pulse and the erase pulse are applied accordingly.

Contrary to the assertions made in the Office Action, Kang is silent as to teaching or suggesting that the **drive frequency** is decreased of the sustain discharges "**as the monitored display load factor increases**," emphasis added, as recited in independent claim 1. Furthermore, Kang does not teach or suggest that the decrease of the drive frequency of the sustain discharges and the increase of the display load factor occurs when measuring the brightness and calculating the number of the sustain pulses of the color signal ratio required in good white balance.

According to the Office Action, column 4, lines 40-45, teach or suggest, "so that a ratio of the emission intensity of said fluorescent substance of each color during a white display is roughly the same when said display load factor is low and high," as recited in independent claim 1. As previously set forth, column 4, lines 40-45, describes measuring the brightness of each color signal and the color coordinates from at least more than one sub-field, calculating the number of the sustain pulses of the color signal ratio required in good white balance, applying the sustain pulse and an erase pulse, and independently adjusting the sustain period. However, nothing in Kang discusses a ratio of emission intensity and the display load factor.

Kang generally describes a pair of erase pulses 103 and 104 applied to be synchronized to a first sustain electrode 4 according to the number of the sustain pulses 100 required in good white balance, and a pair of color 2 erase pulses 103a and 104a which have the same pulse width and inverted phase from each other are applied to the first sustain electrode 4 and the address electrode 7. See column 6, lines 1-11. However, Kang is silent as to providing, "a ratio of the emission intensity of said fluorescent substance of each color during a white display is roughly the same when said display load factor is low and high," as recited in independent claim 1. In addition, Kang does not provide for the display load factor.

Further, in Kang, a calculated value of a number of sustain pulses of R:G:B ratio required in good white balance is input to a microprocessor 20 and the microprocessor 20 outputs a control signal to a sustain pulse generator 32 and an address driver 50. See column 6, lines 20-33. If the sustain pulse generator 32 outputs the sustain pulse, a driving logic unit 33 sequentially applies a scan pulse to the first and second sustain electrode lines according to a

clock CLK, 8 bits of data synchronized thereto and the sustain pulse. However, nothing in Kang teaches or suggests, "a ratio of the emission intensity of said fluorescent substance of each color during a white display is roughly the same when said display load factor is low and high," as recited in independent claim 1. In addition, Kang is silent as to providing for the display load factor.

Furthermore, the brightness of a color signal must not be interpreted to be equivalent to intensity. Both concepts are different. Specifically, as well known, brightness defines the white light or concerns the valuation of the white light; where intensity is the estimation in comparison with the possibilities of the sources of light. Thus, it is not proper to conclude that measuring the brightness of each color signal is the same as, "a ratio of the emission intensity of said fluorescent substance of each color during a white display is roughly the same when said display load factor is low and high," as recited in independent claim 1. In addition, Kang is silent as to providing for the display load factor.

Kang discloses that in the lines 15-54 of column 6, the brightness of each of R, G and B and the color coordinates **are measured** every sub-field SF1 to SF8 when controlling the white balance in consideration of the characteristics of the panel, the number of the sustain pulses of R:G:B ratio required in good white balance is calculated, the calculated value is input to a microprocessor 20 and the microprocessor 20 outputs a control signal to a sustain pulse generator 32 and an address driver 50. Further, in the claims 1 and 6 as a method for driving, the brightness of each color is measured. And in the claim 14 as a matrix of plasma cells, a microprocessor determines a number of sustain pulses of a color signal ratio required for good white balance from at least two sub-fields. That is, the microprocessor does not monitor the brightness of each color and the color coordinates. The microprocessor simply calculates the necessary sustain pulse depending on the input measured value.

Therefore, it is clear that according to Kang, the drive unit does not monitor the display load factor, or power consumption, drive frequency of sustain discharge, luminance value or display area value of each color. In Kang, the brightness of each color is measured first, provably before shipping the display panel. Then, such measured data is input to the microprocessor so that the microprocessor determines the number for sustain pulses and controls the erase pulses. Once the erase pulse timing is determined, such sustain operation is maintained forever. Kang does not change the sustain operation depending on the display load factor while the display operation, because no monitoring the display load factor. Kang does not consider that the fluorescent substance of RGB have a different characteristics depending on

the drive frequency, as shown in Fig. 4 of the present application. Therefore, Kang does not monitor the display load factor as the present invention.

One of the many advantages of the present invention is that in a case where the drive frequency is controlled to be lowered as the display load factor increases, the white balance can not be maintained due to the fluorescent substance characteristics as shown in Fig. 4. Therefore, in the present invention, the drive unit monitors the display load factor in order to correct the intensity of the image signals to maintain the white display in the same condition.

Because independent claims 2 and 3 include similar claim features as those recited in independent claim 1, although of different scope, the arguments presented above supporting the patentability of independent claim 1 are incorporated herein to support the patentability of independent claims 2 and 3. In addition, independent claim 2 recites, "said drive unit makes a correction so that an intensity of an image signal of green is decreased or an intensity of an image signal of blue is increased compared with a case when the monitored display load factor is lower, and drives all of the pixels in the panel according to the corrected intensity of the image signal of green or blue." Once again the Office Action refers to column 6 of Kang as teaching such recitation. However, Applicants respectfully traverse such reference. Nothing in Kang specifically teaches or suggests that the intensity of the image signal of green or blue is decrease or increase, respectively, to make a correction. Kang limits its description to processing erase pulses, adjusting the white balance, and acknowledging that the color signals comprise red, green and blue color signals.

Referring to independent claim 7, according to the Office Action, FIG. 4, item 20, and column 4, lines 40-60 of Kang describe "a driver which monitors a display load factor, repeats a sustain discharge according to a drive frequency, and drives pixels of the colors in the panel during a sustain discharge period which corresponds to intensities of input image signals of the colors," as recited in independent claim 7. Item 20 of Kang refers to a microprocessor to digitize the R, G, and B picture data applied from an exterior and to output R, G, and B digital picture data of 8 bits and various control signal required in driving the PDP according to the external signal. Column 4, lines 40-60, of Kang generally describes measuring the brightness of each color signal and the color coordinates from at least more than one sub-field and calculating the number of the sustain pulses of the color signal ratio required in good white balance, applying the sustain pulse and an erase pulse, and independently adjusting the sustain period of each color signal based on the erase pulse by the color.

However, contrary to the contentions made in the Office Action, Kang is silent as to

teaching or suggesting repeating "a sustain discharge according to a drive frequency," as recited in independent claim 7. Nothing in the referred portions, or anywhere else in the cited reference, teaches or suggests repeating the sustain discharge according to the drive frequency, but instead based on brightness, number of sustain pulses, and the erase pulse.

In addition, the referred portion of Kang fails to teach or suggest, "wherein said driver **limits a range of the drive frequency** so that a chromaticity coordinate value during a white display is roughly constant **regardless of a display load** which depends on a luminance and/or a display area of a display image," emphasis added, as recited in independent claim 7. Kang does not broach the principle of limiting the range of the drive frequency. Rather, Kang limits its description to generating a visible light by exciting the phosphor material of the PDP to ultraviolet rays, measuring the brightness of each color signal, calculating the number of the sustain pulses, applying the sustain pulse and an erase pulse, and independently adjusting the sustain period of each color signal based on the erase pulse by the color. See column 1, lines 39-45, and column 4, lines 40-60.

In view of the foregoing, it is respectfully requested that independent claims 1-3, and 7 and related dependent claims be allowed.

In the Office Action at pages 5-8, items 7-10, claims 1-3, 6, 7, 22, and 24 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,331,843 to Kasahara et al. ("Kasahara"). The rejection is traversed and reconsideration is requested.

Kasahara generally describes a display apparatus performing weighting for each subfield, outputting a drive pulse of a number N-times this weighting, or outputting a drive pulse of a time length N-times this weighting, and adjusting brightness in accordance with the total drive pulse number in each pixel, or the total drive pulse time. See column 3, lines 36-42. Further, the apparatus generates a weighting N based on brightness data, multiplying N-times the weight of each subfield based on multiple N, setting a drive pulse number, and setting a drive pulse width. See column 4, lines 30-41. The weighting multiplier N and a multiplication factor A are increased as an average level of brightness becomes lower to make the image brighter. See column 23, lines 24-45.

However, generating and processing the weighting N and the multiplication factor does not teach or suggest that the **drive frequency** is decreased of the sustain discharges "**as the monitored display load factor increases,**" emphasis added, as recited in independent claim 1. Furthermore, Kasahara does not teach or suggest that the decrease of the drive frequency of the sustain discharges and the increase of the display load factor occurs when measuring the

brightness and calculating the number of the sustain pulses of the color signal ratio required in good white balance. Instead, Kasahara makes a small reference to frequency by showing in FIGS. 10A and 10B waveform diagrams of PDP driving signal when vertical synchronizing frequency is 60 Hz and 72 Hz. Kasahara does not decrease the drive frequency of the sustain discharges as the load factor increases.

Kasahara describes changing the multiplication factor A in accordance with the average level of brightness, processing an average level L_{av} and peak level L_{pk}. Further, Kasahara describes that the display apparatus adjusts the subfield number in accordance with brightness on the basis of screen brightness data, the number of subfields Z, and also adjusts the value of the N-times mode N, the multiplication factor A of the multiplier 12, and the value of the number of gradation display points K, to create an optimum image in accordance with screen brightness. However, nothing in Kasahara teaches or suggests adjusting the drive frequency by decreasing it "as the monitored display load factor increases," as recited in independent claim 1. The cited reference is silent as to providing that "wherein said drive unit makes a correction to change an intensity of one of the image signals of a predetermined color depending on a change of the monitored display load factor,... so that a ratio of the emission intensity of said fluorescent substance of each color during a white display is roughly the same when said display load factor is low and high," as recited in independent claim 1.

Because independent claims 2, 3, and 11 include similar claim features as those recited in independent claim 1, although of different scope, the arguments presented above supporting the patentability of independent claim 1 are incorporated herein to support the patentability of independent claims 2, 3, and 11.

In addition, independent claim 2 recites, "said drive unit makes a correction so that an intensity of an image signal of green is decreased or an intensity of an image signal of blue is increased compared with a case when the monitored display load factor is lower, and drives all of the pixels in the panel according to the corrected intensity of the image signal of green or blue." Nothing in Kasahara teaches or suggests that the intensity of the image signal of green or blue is decrease or increase, respectively, to make a correction. Kang limits its description to adjusting the field number, the factor N, and the multiplication factor A.

In view of the foregoing, it is respectfully requested that independent claims 1-3, and 11 and related dependent claims be allowed.

REJECTION UNDER 35 U.S.C. § 103:

In the Office Action at pages 9-10, items 11-13, claims 11 and 12 are rejected under 35 U.S.C. §103(a) as unpatentable over Kang and Kasahara. Applicants respectfully traverse the rejection and request reconsideration.

The arguments presented above asserting the patentability of independent claim 11 in view of Kasahara are incorporated herein. As previously set forth, Kasahara does not teach or suggest that the decrease of the drive frequency of the sustain discharges and the increase of the display load factor occurs when measuring the brightness and calculating the number of the sustain pulses of the color signal ratio required in good white balance. Instead, Kasahara makes a small reference to frequency by showing in FIGS. 10A and 10B waveform diagrams of PDP driving signal when vertical synchronizing frequency is 60 Hz and 72 Hz. Kasahara fails to teach or suggest, "drives pixels of each of the colors in the plasma display panel according to intensities of the image signals so as to have the pixels emit light with emission intensities corresponding to the intensities of the image signals and changes the drive frequency of sustain discharges according to the estimated display load factor," as recited in independent claim 11.

Kang provides measuring the brightness of each color signal, calculating the number of the sustain pulses of the color signal ratio required in good white balance, applying the sustain pulse to the scan electrode and the common electrode after calculating the number of the sustain pulses, applying an erase pulse based on the calculated value for the period in which the sustain pulse is applied, and independently adjusting the sustain period of each color signal based on the erase pulse by the color.

However, Kang makes no reference of a relationship of the drive frequency of the sustain discharges and the display load factor and driving the pixels while the relationship between the sustain discharges and the display load factor occurs. Basically, Kang calculates the number of sustain pulses of the color signal ratio required in good white balance. Once a value for this calculated number is determined, then the sustain pulse and the erase pulse are applied accordingly.

It is contended in the Office Action that Kasahara teaches the objective, color balance, lines 5-6 of page 10 of Office Action. However, Kasahara does not have any object for color balance. Kasahara's object is to avoid the pseudo-contour noise by controlling the sub-fields. As the Examiner pointed out, in Kasahara, the drive frequency is varied according to the brightness. See Fig. 12, N times mode value N being 1 in 100% Lav, and N being 6 in 0% Lav. However, Kasahara does not teach or mention that the white balance cannot be maintained when the

drive frequency is varied. This point also is not disclosed in Kang. Therefore, even though combining Kasahara and Kang, the present invention cannot be provided.

Thus, even assuming, *arguendo*, that Kang and Kasahara were combined, a combination thereof would fail to teach or suggest all the recitations of independent claim 11. For instance, Kang and Kasahara fail to teach or suggest, "a drive unit, which monitors the estimated display load factor, ...drives pixels of each of the colors in the plasma display panel according to intensities of the image signals so as to have the pixels emit light with emission intensities corresponding to the intensities of the image signals and changes the drive frequency of sustain discharges according to the estimated display load factor, and changing an intensity of one of the image signals of a predetermined color depending on a change of the estimated display load factor," as recited in independent claim 11.

In view of the foregoing, it is respectfully requested that independent claim 11 and related dependent claims be allowed.

In the Office Action at pages 10-12, items 13-15, claims 8-10, 13, 14, 25, and 26 are rejected under 35 U.S.C. §103(a) as unpatentable over Kang. Applicants respectfully traverse the rejection and request reconsideration.

On page 10, item numbered 14, the Office Action correctly recognized that Kang fails to teach or suggest, "wherein said driver limits a range of the drive frequency so that a color temperature value during a white display is roughly constant regardless of the monitored display load factor which depends on a luminance and/or a display area of a display image," as recited in independent claim 8, and "wherein said driver limits a range of the drive frequency so that a deviation from a color temperature curve denoted by a black body radiation curve during a white display is roughly constant regardless of the monitored display load factor which depends on a luminance and/or a display area of a display image," as recited in independent claim 9.

Thus, the Office Action conclusively asserts that "Kang...obviously implies a chromaticity diagram indicating a variation of color temperature of an energy emitting black body radiation."

As commonly understood, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art..."[the Examiner] can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fritch, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992). In addition, the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. Id. at

1783-84. However, the Examiner has provided absolutely no motivation to arrive to the presently claimed invention. Rather, baseless contentions are made to arrive to the recitations of independent claims 8 and 9.

"Rejection of patent application for obviousness under 35 USC §103 must be based on evidence comprehended by language of that section, and search for and analysis of prior art includes evidence relevant to finding of whether there is teaching, motivation, or suggestion to select and combine references relied on as evidence of obviousness; factual inquiry whether to combine references must be thorough and searching, based on objective evidence of record." In re Lee 61 USPQ2d 1430 (CA FC 2002)

It is improper to merely deem something obvious without any teaching/suggestion, or the taking of Official Notice. "It is fundamental that rejections under 35 U.S.C. §103 must be based on evidence comprehended by the language of that section." See In re Lee 61 USPQ2d 1430 (CA FC 2002) (citing In re Grasselli, 713 F.2d 731, 739, 218 USPQ 769, 775). If the U.S. Patent and Trademark Office wishes to take Official Notice that the proposed structural and functional modification is notoriously well known, it is respectfully requested that supporting evidence be provided such as a signed Affidavit by the Examiner of record.

In addition, according to the Office Action, the recitation of independent claim 10, "wherein said driver limits a range of the drive frequency so that a chromaticity coordinate value during a white display is within ±0.005uv of a deviation region from a color temperature curve denoted by a black body radiation curve regardless of the monitored display load factor which depends on a luminance and/or a display area of a display image," is an obvious design choice.

However, in *In re Garrett,* 1986 Pat. App. LEXIS 8 (Bd. Pat. App. 1986), the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences ("Board") reversed an examiner's rejection that was based upon similar grounds. The Board stated:

> [T]he examiner has not presented any line of reasoning as to why the artisan would have been motivated to so modify the ... structure, and we know of none. The examiner's assertion ... that the proposed modification would have been "an obvious matter of engineering design choice well within the level of skill of one of ordinary skill in the art" is a conclusion, rather than a reason.

Thus, in the present case, the Office Action improperly states a conclusion rather than a reason for the conclusion. The belief that the limitation in question is a design choice is not a sufficient basis for determining that the limitation would have been obvious to one of ordinary skill in the art. A finding that a limitation would be obvious must be supported by the totality of the record and cannot be upheld where a mere conclusion that the limitation is an obvious

design choice. As demonstrated by the cases cited above, such a conclusion is clearly improper where it is not demonstrated that the prior art provides a motivation for one skilled in the art to make the necessary changes to a reference device.

Applicants respectfully assert that the prima facie burden has not been met.

In view of the foregoing, it is respectfully requested that the rejection to the claims be withdrawn.

In the Office Action at pages 12-13, items 16-17, claims 4, 5, and 15-20 are rejected under 35 U.S.C. §103(a) as unpatentable over Kang, Kasahara, and Nagai (2002/0044105) ("Nagai"). Applicants respectfully traverse the rejection and request reconsideration.

The arguments presented above are incorporated herein to support the patentability of claim 4-5/3 and 15-20/11 over Kang and Kasahara.

Nagai generally provides for an inverted gamma correction, color temperature conversion, and video demodulation. See paragraph [0078]. Also, an automatic power control of the plasma display is carried out by increasing/decreasing a number of sustain pulses per field and characteristics of color temperature conversion. See paragraphs [0125], [0136], [0141], and [0142].

However, similarly to Kang and Kasahara, Nagai fails to teach or suggest changing, "the drive frequency of sustain discharges according to the estimated display load factor," as recited in independent claim 11. The references are silent as to providing such claimed recitations.

Further, Kang, Kasahara, and Nagai, individually or combined, fail to teach or suggest, "while controlling to decrease a drive frequency of sustain discharges as the monitored display load factor increases, wherein when the monitored display load factor decreases, said drive unit makes a correction so that an intensity of an image signal of green is increased or an intensity of the image signal of blue is decreased compared with a case when the monitored display load factor is higher, and drives all of the pixels in the panel according to the corrected intensity of the image signal of green or blue," as recited in independent claim 3. Thus, even assuming, *arguendo*, that Kang, Kasahara, and Nagai were combined, a combination thereof would fail to teach or suggest all the recitations of independent claims 3 and 11.

Thus, it is respectfully requested that independent claims 3 and 11 and related dependent claims be allowed.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot and further, that all pending claims patentably distinguish over the prior art. There being no further outstanding objections or rejections, the application is submitted as being in condition for allowance, which action is earnestly solicited. At a minimum, this Amendment should be entered at least for purposes of Appeal, since it either clarifies and/or narrows the issues for consideration by the Board.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner's contacting the undersigned attorney for a telephone interview to discuss any such remaining issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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